

**T. J. Smull College of Engineering Assessment Committee:  
Response to the University Assessment May 15, 2007 Report**

Jan. 7, 2008

Introduction

The College of Engineering Assessment Committee met three times in late November and early December 2007 to review the document “2006 Annual Report on the Assessment of Student Learning.” This document reports the eight measurements with respect to the nine general education learning objectives. Specifically, the university assessment committee has reported that the following items were found to be below the minimum standards of performance:

- Writing abilities (Objective 1)
- Speaking abilities (Objective 1)
- Solving real-world problems (Objective 2)
- Understanding of self (Objective 4)
- Contributing to the welfare of the community (Objective 7)
- Developing a personal code of values and ethics (Objective 8)
- Understanding of people from other racial and ethnic backgrounds (Objective 9)
- Knowledge of people from other racial and ethnic backgrounds (Objective 9)
- Ability to get along with people of different races and cultures (Objective 9)
- Understanding of global issues (Objective 9)
- Appreciation for different points of view (Objective 9)

Each college is to choose one of the first three bullets and one of the remaining bullets to focus on improving via curricular and co-curricular changes.

Discussion

Of the first three bullets, the College of Engineering Assessment Committee has decided to focus on Objective 1 (Communicate Effectively) rather than the solving of real-world problems (Objective 2). The CLA direct task-oriented test indicates engineering students are doing above average compared to the other undergraduate colleges at ONU. Overall, the university reports the CLA performance of students to be at the expected performance level. However, in the NSSE and CSS senior surveys and the alumni survey, engineering seniors and alumni responded weakly that ONU had improved their writing and speaking abilities. After discussion, the committee decided that speaking abilities will be our main focus, but writing abilities will also be addressed. Communication skills are vital to the technical fields of engineering and computer science.

Of the remaining bullets, Objectives 7 and 9 were of most concern to the college committee members, as the engineering-related communities (students/alumni/employers) were weakest on these two objectives overall. Specifically, there was concern for “Contributing to the welfare of the community”

and “Understanding of global issues”. The notion of the welfare of the community is inherently built into the definition of the profession of engineering. The Accreditation Board for Engineering and Technology defines engineering as “the profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind.” For instance, if an engineer designs a better traffic intersection design or manufactures a part with more reliability, that is contributing to the welfare of the community. The committee questions whether the respondents truly understood the intent of the survey questions. Were the questions more focused on volunteer efforts within the community? Because of this uncertainty, the committee has decided to focus on “Understanding of global issues”.

### Plan

The assessment committee split in half (faculty and students) to have two separate brainstorming sessions. Then, the two groups joined together to discuss their ideas and identify a final path for improvement.

#### Objective 1: Speaking Abilities

1. In fall quarter, all engineering majors enroll in GE 104: Freshman Engineering 1. Within this course, each student is required to make a one-minute engineering presentation. The topic can be either a famous engineer, a newsworthy event related to engineering, a definition of a technical term, or a demonstration of a device. A common assessment rubric is utilized to provide feedback on the following areas: responsiveness to the audience, speech patterns, verbal rhetoric, and physical. This one-minute engineering presentation was first included in the 2006 curriculum, and again utilized in 2007. Dr. Estell and others are reporting on the results of this implementation in the 2008 Proceedings of the American Society for Engineering Education.
2. The Freshman Curriculum Committee is currently discussing the following action. In winter quarter, all engineering majors enroll in GE105: Freshman Engineering 2. Beginning in 2008-09, students will be asked to individually choose and read a monthly professional engineering society article. The student will then write a one-page summary of this article. The articles will be chosen from a list that has a focus on global issues. Students will then be assigned to teams, and each team will present one of their articles to the class in a five-minute presentation, with each student participating in the team presentation.
3. During the sophomore year, all engineering students take general engineering science courses such as GE 213: Dynamics. During these types of courses in 2008-09, it will be encouraged that students complete some problems at the board and present the proper problem solution. This technique is currently in utilization within other courses (such as ECCS 472: Engineering Economy and ME 382: Engineering Analysis), but this will ensure all students have this exposure at an earlier point in their studies.

### Objective 1: Writing Abilities

1. In 2008-09, the departments will be encouraged to incorporate a revision system of writing assignments within their courses. For instance, a student is commonly asked to write a lab report and it is then graded by the professor. Currently, this ends the evaluation process. It is proposed that the student would then incorporate the professor's markings and suggestions for improvement and resubmit the document. Obviously, the original grade will be counted more heavily in the grading process in order to avoid professors becoming proof-readers. However, this should allow students the opportunity to practice strengthening their writing. This technique is utilized in some junior and senior courses (ME 382: Engineering Analysis and ECCS 404: Senior Design Seminar), but would be well-suited to the freshman engineering sequence of GE 104-105-106.
2. Encourage more individual writing assignments throughout the curriculum. This will be implemented on a department basis. Currently, the majority of writing assignments are done by teams of students.
3. Require at least one Communication Skills Center assignment per year throughout the curricula.

### Objective 9: Understanding Global Issues

1. Encourage external speakers to come to campus for either professional society meetings or the professional hour (Tuesdays at 1:00).
2. Identify possible Spotts Lecture topics that relate strongly to global issues.
3. Tie the freshman GE 105 article assignment (mentioned prior) to a topic of global nature.
4. Consider specifying a requirement for a general education elective that supports global understanding. This will be considered after the university general education committee concludes their work and reports to the university community their recommendations.
5. Encourage faculty to identify and discuss issues of global impact or current events within their classrooms as appropriate.

### Conclusion

The committee appreciates the difficulty in identifying direct measures for the general education objectives. However, without seeing all the questions asked to the respondents in the indirect survey instruments, it is more difficult to judge all the changes that should be made to improve performance with respect to the objectives. After reviewing the May 15, 2007 report, the College of Engineering Assessment Committee has identified the speaking and writing abilities of its students as key areas for focus. In addition, it is important to continue to broaden the knowledge and experience of our students so that they are more prepared for the global marketplace. Further work and discussion regarding the action plan will occur throughout the 2007-08 academic year at the department and college levels to facilitate implementation in 2008-09.